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ABSTRACT

The research examined the peer relations of autistic children and adults. In the first study, six autistic males (ages 6-21 years) were observed over a 1-year period. Results indicated that statistically significant improvements in peer relations were not observed over the 1-year period. Subsequently the peer relations of 11 autistic persons (ages 6-22 years) were compared at a single point in time to that of 11 developmentally delayed and 8 normal subjects matched for mental age. Older autistic individuals were significantly more likely to interact with adults and significantly less likely to interact with peers than the younger autistic subjects. When the autistic subjects did interact with peers these interactions were similar to those of matched developmentally delayed and normal subjects. Results suggested that autistic persons do make advances in their interactions with adults (but not in peer relations) with increasing age though these changes are not noticeable over a 1-year time span. (Author/DB)

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Peer Relations of Autistic Persons

Longitudinal Changes, Group Comparisons, and Correlations

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Abstract

The aim of this research was to provide descriptive data on the peer relations of autistic persons. Initially, 6 autistic persons were observed over a 1 year period to gather longitudinal data. Results indicate that over 1 year, statistically significant improvements in peer relations were not observed. Subsequently, 11 autistic subjects and groups of 11 developmentally delayed and 8 normal subjects matched for MA were observed at a single point in time. Older autistic persons were significantly more likely to interact with adults and significantly less likely to interact with peers than younger autistic persons. When autistic persons did interact with peers, these interactions were mainly similar to those of matched developmentally delayed and normal subjects.

Both early accounts of infantile autism (Kanner, 1943) and the current Diagnostic and Statistical Manual (DSM-III) of the American Psychiatric Association include disturbances in peer relationships among the behavioral characteristics associated with this syndrome. However, a review of the research literature shows that there have been actually only a few studies that describe the peer behavior of autistic persons.

DeMyer (1979) reported that social interest increased during childhood for most of the 58 subjects studied. Strain and Cooke (1976) observed two autistic children, ages 8 and 9 years and noted that although they responded to some social initiations made by other behaviorally disordered peers, they spent the majority of the time in solitary object manipulations. Similarly, Martini (1980) observed that two autistic subjects engaged in fairly frequent "contacts," but these were of short duration.

The descriptions provided by these and other studies do not constitute an adequate normative data base for this clinical population because the studies either were based on a sample of two children (Martini, 1980; Strain & Cooke, 1976), employed parental reports rather than direct observation (DeMyer, 1979), did not differentiate between autistic and socially impaired developmentally delayed subjects (Wing, 1981), or were clinical intervention studies (e.g., Lord, 1984; McHale, 1983). Therefore, there is still a need for adequately controlled observational studies of peer relations in autistic persons.

One aim of the present study was to collect, longitudinally, descriptive data on the peer relations and social play of autistic persons in a natural setting in order to determine whether there were statistically significant changes within a one year interval. Another aim was to compare the social play and peer relations of autistic persons at a single point in time with those of matched developmentally delayed and normal subjects. The third aim was to examine the relationships among the social play and peer relations variables, and between these variables and the chronological as well as mental ages of the subjects.

Methodology

Subjects

The longitudinal sample consisted of 6 males diagnosed as autistic whose chronological ages (CA) ranged from 6 years, 11 months to 21 years, 6 months (Median (Mdn) = 15-6).

The other sample consisted of an experimental group of 11 persons with autism, a clinical comparison group of 11 developmentally delayed persons, and a control group of 8 normal subjects. All members of the longitudinal sample were also included in the experimental group.

The 10 males and 1 female in the experimental group had been previously diagnosed as having infantile autism. Their CAs ranged from 6-9 to 22-6 (Mdn = 16-0) while their Mental Ages (MAs), as measured by the Peabody Picture Vocabulary Test-Revised (PPVT-R), ranged from below 2-0 to 12-5 (Mdn = 5-3). All subjects had IQs of 73 or below.

The developmentally delayed subjects were matched with the autistic subjects for CA (range = 6-5 to 21-4, Mdn = 15-8) MA (range = below 2-0 to 11-3, Mdn = 4-8) and sex. They had IQs of 70 or below.

Eight normal children were matched with autistic subjects having MAs below 6-0. Matches were made for MA (range = below 2-0 to 5-5, Mdn = 3-9) and sex. All had IQs of 130 or below. No normal matches were obtained for autistic subjects with MAs above 6-0 because the qualified matches for this range would have had free-play periods outdoors, which would have been a different environmental setting from that in which observations were made on all other subjects.

Subjects were recruited with their parents' permission from their classrooms and other organized activities. For more information on subjects, see Table 1.

Insert Table 1 about here

Measures

A Peer Interaction Scale was developed from the work of several authors (Furman, Rahe, & Hartup, 1979; Mueller & Brenner, 1977; Vandell, Wilson, & Buchanan, 1980). Behavior was recorded as adult interaction, peer interaction or no interaction. Interactions were coded as follows: subject was designated as initiator or respondent; quality was judged as positive, negative, neutral or ignoring, and interaction was designated as object-focused or person-focused. The

total number of behaviors by both initiator and respondent in an interaction were also recorded. If the initiator and respondent exhibited the same quality of behaviors in an interaction (i.e., both positive), the interaction was a Reciprocal Interaction; if not, it was a Nonreciprocal Interaction.

Rubin's Scale of Play (1981) was used for information on the social and intellectual quality of subjects' play. It included three social categories: solitary, parallel, and group. The four levels of cognitive play nested in each of these social categories were functional, construction, dramatic, and games-with-rules. Miscellaneous categories included: unoccupied, onlooker, rough-and-tumble, conversation, passive activities, and transition. Although designed for preschoolers, this scale was general enough to code appropriately all subjects' play activities.

Procedure

The study began with collection of data on autistic persons for longitudinal comparisons. One year later, all autistic, developmentally delayed, and normal subjects were observed. The same observational procedures were employed for the two samples.

Subjects were observed by the experimenter and a research assistant in their respective classrooms during regularly scheduled free time. Classrooms included only peers of the same diagnosis, teachers, and aides. All classrooms provided a range of toys and activities.

Teachers and aides were told not to initiate interactions with subjects during observations, but to respond normally if the subject initiated the interaction.

Each subject was observed on 2 separate days for 15 minutes to equal 30 minutes of observations. Observations included a 15 second observation - 15 second record method.

Interrater reliability between the experimenter and a research assistant for 30% of the sample was calculated by dividing the number of agreements by the number of agreements plus disagreements for a particular behavior. The mean percent of agreement between raters for the Peer Interaction Scale and Rubin Scale behaviors were, respectively, 93.73% and 84.38%.

Results

To assess longitudinal changes, a t-test was performed on the percentage scores for a particular behavior (e.g., percent of solitary play to all other behaviors on the Rubin Scale) at Time 1 versus Time 2. Separate t-tests did not reveal significant changes over the one year interval for any of the behaviors assessed by both the Peer Interactions and Rubin Scales.

In order to compare behaviors of autistic, developmentally delayed, and normal subjects with MAs below 6-0, separate ANOVAs were performed on the percentage scores for each of the dependent variables. Subjects with higher MAs were not included so as to have equal group sizes.

On the Peer Interaction Scale, autistic persons demonstrated less total interaction, $F(2,23) = 7.26$, $p < .0005$, less Neutral Behaviors, $F(2,23) = 3.89$, $p < .05$, and a lower Average Number of Behaviors per Interaction, $F(2,23) = 3.70$, $p < .05$ than normal children. Differences that approached significance included less Nonreciprocal Interactions, $F(2,23) = 3.14$, $p < .10$, and Object-centered Interactions, $F(2,23) = 2.43$, $p < .10$ in autistic than developmentally delayed students.

On the Rubin Scale, none of the differences were significant, although differences approached significance in Unoccupied Behavior, $F(2,23) = 2.91$, $p < .10$, with autistic persons spending more time unoccupied than normal children.

T-test comparisons were also made between percentage scores of the different behaviors of all autistic and developmentally delayed persons including those with MAs above 6-0. Comparisons between all autistic and developmentally delayed persons on the Peer Interaction Scale yielded a significant difference in Peer Interactions, $t(1,20) = 11.11$, $p < .005$. While the overall interactions did not differ between groups, autistic persons directed a lower percentage of social behaviors toward peers than did developmentally delayed persons. Two other results that approached significance were a lower percentage among autistic persons of interactions that were Nonreciprocal, $t(1,20) = 2.44$, $p < .10$ and were Object-focused, $t(1,20) = 3.29$, $p < .10$.

Two differences on the Rubin Scale approached significance. Compared to the developmentally delayed subjects, autistic persons spent a lower percentage of time in conversation $t(1,20) = 4.20$, $p < .10$ and exhibited less Parallel Play $t(1,20) = 3,73$, $p < .10$.

Pearson product-movement correlations were calculated to test relationships between the percentage scores for behaviors and the variables of CA and MA for autistic subjects. For more information, see Tables 2 and 3.

Insert Tables 2 and 3 about here

For the Peer Interaction Scale, subjects with higher CAs tended to have higher scores on: Adult Interaction ($r = .70$, $p < .01$), Initiations ($r = .64$, $p < .05$), Neutral Behaviors ($r = .59$, $p < .05$), Reciprocal Interactions ($r = .92$, $p < .0001$) and Average Number of Behaviors per Interaction ($r = .74$, $p < .01$). There were no significant relationships between CA and overall frequency of Interaction nor Peer Interaction. Thus, gains in social behavior with age were found in interaction with adults. Although no significant correlations were found with Mental Age, two approached significance. Mental Age was positively correlated with Adult Interaction ($r = .67$, $p < .10$) and negatively correlated with Peer Interaction ($r = -.67$, $p < .10$). Autistic persons who are more cognitively advanced seem more likely to interact with adults than peers. On the Rubin Scale, no significant relationships were found between the behavior variables and CA or MA.

Discussion

Past studies (DeMyer, 1979) indicating that the social interactions of persons with autism improve with age were upheld by the present study, but only in part. The longitudinal observations did not reveal any significant changes over a one year period. However, correlational analyses of data from observations taken at a single point in time showed that with increasing chronological age, autistic persons initiated social interactions more frequently. Furthermore, the average number of behaviors per interaction was greater. In addition, the interactions were more reciprocal in nature and involved fewer neutral behaviors. Thus, some important changes take place over time but are probably too small and occur too gradually to be noticeable over a one year span.

The present study also showed that with increasing age, autistic persons interact significantly more often with adults. Since the overall frequency of interaction is not significantly associated with increasing age, the increment in interactions with normal adults is achieved at the expense of interactions with other autistic persons. This finding highlights the importance of providing autistic person with exposure to normal persons, as well as improving their own social skills so that their interactions with one another will be more mutually rewarding.

Compared to normal children matched in MA, autistic persons with MAs below 6-0, as expected, engaged in fewer interactions overall. In addition, a single interaction of theirs involved fewer behaviors.

Their social play as measured on the Rubin did not differ significantly, although they engaged more in the staring, pacing, and self-stimulating behaviors coded as unoccupied behavior. Also, autistic persons' interest in peers decreased with age while normal subjects showed the opposite.

When autistic persons and developmentally delayed persons matched for MA were compared, significant group differences in peer interactions and social play did not emerge although some trends approached statistical significance. Furthermore, their social play deviated form that of normal children in different ways. Both differed from the normal group in social play, but while the autistic group showed more unoccupied behaviors, the developmentally delayed group engaged in more solitary and functional play.

In conclusion, persons with autism do seem to make spontaneous advances in their interactions with adults with increasing age and cognitive skills, although such changes may be too slow to be noticeable over a one year time span. However, no such improvements are seen in peer relations. When autistic persons do interact with their peers, these interactions are mainly similar to those of matched normal and developmentally delayed subjects. These conclusions, however, are based on data from a small sample. Replication studies involving larger samples are needed to confirm them.

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Table 1

Demographic Characteristics of Subjects

	Autistic Summer 1983 N = 6	Autistic Summer 1984 N = 11	Developmentally Delayed N = 11	Normal N = 8
Median CA	15-6	16-0	15-8	3-1
Median MA	N.A.	5-3	4-8	3-9
Male:Female Ratio	6:0	10:1	10:1	7:1

N.A. = no information available to report

Table 2

Correlation Coefficients Among Behavior Variables and Chronological Age
Autistic Subjects
Peer Interaction Scale
N = 11

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Interaction	1.00															
2. No Interaction	-1.00	1.00														
3. Adult	.59*	-.59*	1.00													
4. Peer	-.16	.16	-.55	1.00												
5. Initiates	.65*	-.65*	.81***	-.17	1.00											
6. Responds	.28	.28	-.43	.73**	-.49	1.00										
7. Positive	.60*	-.60*	.29	-.03	.38	-.16	1.00									
8. Negative	-.19	.19	-.49	.78***	-.14	.50	-.25	1.00								
9. Neutral	.60*	-.60*	.97***	-.48	.79***	-.36	.45	-.57	1.00							
10. Ignore	-.16	.16	-.20	.38	-.17	.43	-.19	-.17	-.09	1.00						
11. Reciprocal	.43	-.43	.71**	-.08	.60*	.05	.22	.15	.65*	-.46	1.00					
12. Nonreciprocal	.05	-.05	-.25	.60*	.11	.26	.07	.10	-.13	.82***	-.44	1.00				
13. Number	.72**	-.72*	.72*	-.07	.79***	-.01	.25	.06	.69**	-.01	.74**	.12	1.00			
14. Object	-.19	.19	-.32	.53	-.43	.82***	-.13	.64*	-.34	-.13	136	-.25	.02	1.00		
15. Person	.56	-.56	.70**	.00	.91***	-.31	.34	-.21	.73**	.22	.38	.46	.75**	-.50	1.00	
16. Chronological Age	.37	-.37	.70**	-.17	.64*	-.14	.06	.16	.59*	-.53	.92***	-.46	.74**	.19	.40	1.00

*$p < .05$
**$p < .01$
***$p < .005$

Table 3

Correlation Coefficients Among Behavior Variables and Chronological Age
Autistic Subjects
Rubin Scale of Play
N = 11

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Unoccupied	1.00														
2. Onlooker	-.12	1.00													
3. Passive Activities	-.02	-.16	1.00												
4. Conversation	-.33	.16	-.21	1.00											
5. Transition	-.45	-.12	-.20	.50	1.00										
6. Rough and Tumble	-.34	-.02	-.10	.76**	.59*	1.00									
7. Solitary Play	-.71**	-.42	-.14	.09	.32	.27	1.00								
8. Parallel Play	.00	.00	.00	.00	.00	.00	.00	.00							
9. Group Play	.00	.00	.00	.00	.00	.00	.00	.00	.00						
10. Functional Play	-.23	-.39	-.04	.47	.81***	.66*	.30	.00	.00	1.00					
11. Construction	-.36	-.17	-.10	.18	.33	-.10	.16	.00	.00	.20	1.00				
12. Dramatic Play	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
13. Games	-.52	-.17	-.10	-.21	-.20	-.10	.80***	.00	.00	-.31	-.10	.00	1.00		
14. Adult Interaction	-.43	.68*	-.24	.23	.05	-.08	-.18	.00	.00	-.25	.46	.00	-.10	1.00	
15. Chronological Age	-.26	.22	-.34	.14	-.30	-.07	.15	.00	.00	-.18	.11	.00	.24	.48	1.00

*p <.05

**p <.01

***p <.005